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Abstract of **DE4425567**

The transmission system has a fixed control used to provide analogue control commands which are digitalised and fed via digital transmission channels to a mobile reception device for video and tone signal reception. The received control commands are at least partially converted into control commands for movement of the mobile unit via an autonomous drive, with simultaneous display of audio/visual information. Pref. the analogue commands are provided with a clock frequency of at least 33 mhz and converted into digital signals using a working memory of 16 Mbyte and a 120 Mbyte memory.

Interactive information transmission system

The invention concerns a procedure for the interactive information transfer.

Even if humans are spatially far from each other, a need at interactive communication nevertheless often exists. While on the purely acoustic sector this need is sufficiently covered by the telephone network, interactive audiovisual communication is still little developed. While conference circuits are meanwhile quite usual in the television, for example in newscasts, a private face-to-face phone net was not established still. Just as largely the need of transmission of information, insbesonde of audiovisual kind, of not locally a present person is. All procedures used so far of this kind permit however only limited decision possibilities, which concerns the selection of the conveyed information to the information receiver.

For example the object monitoring is usual would also firmly install here cameras, whose pictures are conveyed into a control center. The information flow flows thereby however only into a direction and the information receivers can normally not the line of sight or the screen window select. Beyond that is all this procedures in common that at the places, between which an information exchange is to take place extensive precautions to be met to have and the Informationsaustausch remains limited then on these two given places. The transmission devices set up at a place or both place are spatially firm or only very

limited mobile and have, which concerns the visual transfer option, a very much limited visual field.

It was so far also only reduced possible to steer the photograph device from the receiving place in satisfying way to thus make really completely interactive communication possible. In addition a very efficient and approximately delay-free transmission system is necessary, in order to let d(e large data abundance which can be transferred react in real time too transferred and the photography module to the instructions of the receiver. By the necessary extensive precautions it was so far also impossible to make an interactive information transfer possible from a place to at which no monitoring persons for this information transfer were present. Often it is also completely impossible to take appropriate precautions. If the place of an event is not foreseeable, then it is not desirable, over data communication equipment too orders previous precautions makes necessary. Also in the disaster control it is desirable to refer from areas information which is not accessible to humans and can in whom it no appropriate precautions for information transfer meet.

Task of this invention is it thus to create a procedure for the interactive information transfer which does not require extensive preparations at the respective destination, which makes no operating personnel - excluded the information receiver - necessary, for its movement radius on few meters is not limited and by the Informationsempfänger in real time is spatially controllable and it made possible to convey also for his part information signals to the observation place. A procedure for the interactive information transfer will be given according to invention, digitized presented, which is characterized by it, by a spatially firm control unit similar control instructions and transferred over digital channels to a mobile, also a drive provided receipt device, which is equipped with picture and/or clay/tone receipt devices, and into control instructions for progressive movement to be there at least partly converted, and that the receipt device transfers the received picture and/or Toninformationen over the same channels digitally to the control device, where the digital signals are converted into audiovisual information.

A practical remark example of the procedure according to invention can look as follows: A spatially firm control unit covers a control device, for example a control stick, for the controlling of the translatorischen movement of the mobile receipt device. The similar control instructions given with the control stick are converted from a personal computer into digital instructions and fed by modem and telephone connection into the Funktelefon D net. Over the digital radio telephone network a mobile telephone is then headed for, which is in the mobile receipt device. This mobile receipt device is preferentially in a small flying object, for example a model helicopter, installed, can however likewise into a ground-based progressive movement means like a car, or also a model boat o. ae. inserted werden. Es is also conceivably that mobile receipt device at preferential places of

work installs itself firmly finds and only within a certain framework can be spatially moved, for example on rails or at a linkage led.

The digitized control instructions arriving at the radio telephone are converted by modem and PC, which are implemented as so-called Notebook preferentially, into instructions, which steer partially the translatorische progressive movement of the mobile receipt device. For example servo actuators can be headed for, which steer the drive of the progressive movement means. The mobile receipt device has a video camera for the admission of acoustic and visual information signals. Preferentially the camera is mobile attached in the receipt device and can be moved by means of control signals, which the user from the control unit can send on the way described above. It is for example conceivable that the user carries a helmet, which has a device for the controlling of the video camera, which converts the movement of the head into control instructions, so that, looking around min min of the mobile receipt device is itself possible. Preferably for the transmission of the signals a 80486DX personal computer with a clock frequency is inserted by at least 33 MHz, a main memory (RAM) by 16 MT and a mass storage by mindes 120 MT. The modem coming to the use must a minimum data transmission rate of 9600 builds, preferably of 19200 builds, to have.

The digital radio telephone network can process such signal flows without difficulties and it is possible to steer themselves moving mobile receipt devices in real time and to transfer the control instructions without time and quality losses. The audiovisual signal taken up by the mobile receipt device is only turned around on the same transmission path, transferred back to the control unit and shown there for example on a screen or a three-dimensional illustrating Cyber helmet. For the simple and cheap application of the procedure according to invention however execution forms also simplified are conceivable. For example the translatorische progressive movement of the receipt device can take place also indirectly, as instructions are given to a driver, where it has to drive and only the picture and clay/tone receipt device become, as above described, directly steered. Like that it is possible to select fast and simply for line of sight and screen window however is void the technical expenditure, which an unmanned, a remote-controlled and independently moving receipt device with itself would bring themselves.

In the case of an unmanned receipt device, which moves itself independently, it is appropriate to plan an emergency shut-down. If radio communication between sending and receipt device is interrupted or the fact that the information receiver at the transmission device wants to interrupt the use at short notice is necessary it to secure the moving receipt device. This can take place e.g. by means of it that she if the emergency shut-down is released on the place remained, at which she is straight. Further the receipt device could be additionally provided with commandexercising organs, which can of the Steuereinrichtun out be served.

For example can be attached at the progressive movement means grab arms, dropping devices, loudspeakers, mobile lighting mechanisms, measuring instruments or the like. It would be possible not to become also in emergencies on for humans accessible places fast and safely active. Like that not only the monitoring of an emergency, but also an actual intervention would be possible. The procedure according to invention can find many application possibilities and opens difficult-to-understand variety at possibilities. For example advisory a specialist can intervene at any time in the medical range, even if he locally is not. It is conceivable that for example in operating rooms mobile receipt devices are attached, which are freely mobile for example on rails and telescope arms in certain framework and can over the telephone network be headed for. In each hospital then a control unit can be, so that the respective specialist over the telephone network and the receipt device attend difficult operations and can become advisory active. By the use of the digital radio telephone network and a motorized receipt device it is however also conceivable that specialists at places to become advisory active to be able, at which no previous precautions know met be for example accident victims by accident physicians under consultation of a specialist in a hospital treat themselves, whereby the specialist can supervise model helicopters over the radio telephone network and the control unit, which are in the hospital, as well as to an attached receipt device the treatment. If the receipt device has an appropriate equipment, e.g. over grab arms, the specialist can intervene also directly.

Beyond that also the verkehrsbewachung could be substantially simplified. While to the monitoring of the density of traffic on motorways and other traffic junctions often helicopters at least two persons crew come at present to the employment, which high costs cause, both from the personnel and from the fuel, this task of model helicopters with cultivated video camera could be taken over. The Kosteneinsparunge possible thereby would be immense. Also the security could take place substantially more flexibly, more effectively and also more cheaply. It would not any longer be necessary to install monitoring cameras in so large number that each angle can be supervised.

In practice the past solutions look in such a way that in a control center a screen or some few screens is mostly located for order and is firmly attached on the area many cameras which can be supervised, whose pictures will transfer if necessary to the screen can. From a camera to the next one switches by routine, in order to control alternating all ranges of the area which can be supervised. With the procedure according to invention it would be possible to install a camera in a mobile object and to steer this via the area. It would be e.g. also possible to let the object put back by routine a certain way and if necessary steering intervene, in order to be able to react with special occurrences flexibly. There is also in the disaster control possible for Anwendungsmoeglichkeiten. So a model flying object with inserted video camera could supervise the fire source or observe the expansion of the fire with fires, without thereby persons would have to be used and endangered. It is also possible to equip and to places penetrate

let a model flying object for these purposes particularly e.g. with heat and flame protection, which cannot be achieved by humans no more.

A further large range of application would be the supply of handicapped ones. Small vehicles could be provided with a receipt device according to invention and be steered by handicapped ones from its dwelling by means of a control unit. Like that it would be possible that also obstructed contact with the external world substantially more easily take up and the small vehicle on "purchase-stroll" send can. Then still loudspeakers and grab arms at the receipt device can be intended, so that the user from the control unit with the external world over the receipt device communicate and can become also even active. In same way it would be also possible to simplify courier service activities substantially in which with a model helicopter or a Kleinstfahrzeug the documents which can be dispatched are brought. The control unit can be also transportable. Important decision makers can lead such a transportable control unit practically everywhere with itself and participate in such a way and intervene within shortest time in important procedures. In this case all devices of the control unit would have to be supplied with Akkus. The entrance to the digital telephone network would have to be made by a radio telephone. Since it is possible practically everywhere to arrive over radio telephones in the digital radio telephone network the employment is practically possible from any place. Exactly the same it is possible to take up from driving courses, car etc. by radio telephone and D-net contact to a mobile receipt unit and to receive from there information.

So travel times can be used meaningfully, since the travelers still contact with the external world can maintain. If the presence of a specialist should be nevertheless recommended locally for special reasons, then the time up to its arrival can be bridged by the fact that the connection is made over a mobile receipt mechanism and the radio telephone D-net to the control unit in a car a course. Medium-term would be conceivable that supraregional terminals are furnished, at which the mobile receipt devices be lent can. It could move then e.g. a Hamburg owner of a control unit with a resident of Munich terminal by telephone network a mobile receipt device, for example in a model helicopter, check-out counters and sic thereby in Munich without the model flying object would have to put back only the distance Hamburg Munich.

Thus immediate specialist employment at almost any place would be attainable in shortest time. Also many business trips, with which the respective traveler comes only on a very short period spent at the destination, could be void as for the inspection of a plant, since over check-out counters of an observation object locally the inspection can be accomplished also without journey from the control unit. Thus substantial costs and troubles could be saved

Claims OF DE4425567

1. Procedure for the interactive information transfer, thereby characterized that from a spatially firm control unit it gives similar control instructions to be digitized and over digital channels to a mobile receipt device provided with a drive be transferred, which is equipped with picture and/or clay/tone receipt devices and is there at least partly converted into control instructions for progressive movement, and that the receipt device transfers the received picture and/or tonus formations over the same channels digitally to the control device, where the digital signals are converted into audiovisual information.

2. Verfahren according to requirement 1, by the fact characterized that the similar instructions are converted at least by a EDP mechanism with a clock frequency of at least 33 MHz, a main memory of at least 16 MT and a mass storage by 120 MT into digital instructions.

3. Procedure according to requirement 2, by the fact characterized that the EDP mechanism is a 486DX personnel computer with a clock frequency of at least 33 MHz, a main memory of at least 16 MT and a mass storage of at least 120 MT.

4. Procedure according to requirement 1 to 3, by the fact characterized that the conversion of the instructions transferred for receipt mechanism is made by a EDP mechanism, which corresponds to the EDP mechanism of the control unit in its specifications.

5. Procedure according to requirement 1 to 4, by the fact characterized that as EDP mechanism in the receipt unit a EDP mechanism implemented as Notebook is used.

6. Procedure according to requirement 1 to 5, by the fact characterized that as digital channel the digital radio telephone network is used. 7. Procedure according to requirement 6, by the fact characterized that the digital control instructions and picture and/or tonus formations by modem in the radio telephone network and are out-fed. 8. Procedure according to requirement 7, by the fact characterized that the modem builds a data transmission rate of at least 9600 has.

9. Procedure according to requirement 1 to 8, by the fact characterized that the mobile receipt unit can be connected by means of a radio telephone with the digital radio telephone network.

10. Procedure in accordance with requirement 1 to 9, by the fact characterized that the control unit is transportable.

11 Procedure according to requirement 1 to 10, by the fact characterized that the control unit can be connected by means of a radio telephone with the digital radio telephone network.

12. Procedure according to requirement 1 to 11, by the fact characterized that the current supply of the control unit and/or receipt unit over Akkus is fed.
13. Procedure according to requirement 1 to 12, by the fact characterized that the picture and clay/tone receipt unit are a video camera.
14. Procedure according to requirement 1 to 13, by the fact characterized that the receipt unit on guidance devices is mobile.
15. Procedure according to requirement 1 to 13, by the fact characterized that the receipt unit is motorized mobile.
16. Procedure according to requirement 1 to 13, by the fact characterized that the receipt unit is motorized freely mobile in three dimensions.
17. Procedure according to requirement 1 to 16, by the fact characterized that the transferred control instructions are conveyed at servo actuators, which steer the receipt unit translatorisch.
18. Procedure according to requirement 1 to 17, by the fact characterized that the receipt unit covers a control device for the controlling of the translatorischen movement and a second control device for the controlling of the camera axis of the picture receipt device.
19. Procedure according to requirement 18, by the fact characterized that the transferred control instructions are conveyed at servo actuators, which steer the picture receipt device directional.
20. Prodedure in accordance with requirement 1 to 19, by the fact characterized that the receipt device has additionally command exercising organs, which are steered by the transmission device.
21. Procedure according to requirement 20, by the fact characterized that the command exercising organ is a loudspeaker.
22. Procedure according to requirement 20 or 21, by the fact characterized that the commandexercising organ is a grab arm.
23. Procedure according to requirement 20 to 22, by the fact characterized that the commandexercising organ is a dropping device.
24. Procedure according to requirement 20 to 23, by the fact characterized that the commandexercising organ is a mobile lighting device.
25. Procedure according to requirement 20 to 24, by the fact characterized that the commandexercising organ is a measuring instrument.

26. Procedure according to requirement 1 to 25, by the fact characterized that the mobile receipt device has an emergency shut-down.

27. Procedure after requirement 26, thereby characterized that the emergency shut-down lets the device in the place, in which it is released remain.

28. Procedure according to requirement 26 or 27, by the fact characterized that the emergency shut-down can be activated from the control device or during interruption of the connection between control unit and receipt device is automatically released.

29. Procedure according to requirement 18 to 28, by the fact characterized that the first control device is a control stick and the second control device a Cyber helmet.